Small Business Innovation Research/Small Business Tech Transfer

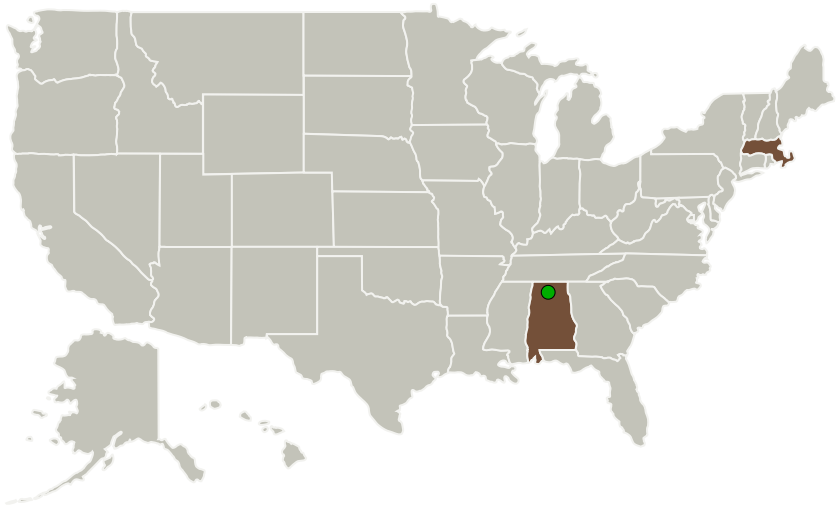
Development of a Cathode Liquid Feed Electrolyzer to Generate 3,600 PSI Oxygen for Both Lunar and Space Microgravity Environments, Phase II

Completed Technology Project (2011 - 2013)

Project Introduction

Giner Electrochemical Systems (GES) proposes to develop a cathode liquid feed, proton-exchange membrane electrolyzer stack and system capable of producing 3,600 psi oxygen. We propose to subcontract Hamilton-Sundstrand Human Space Systems (H-S) to share unique state-of-the-art technologies that provide the best path to meeting program objectives. GES will share their data and expertise with high balanced pressure electrolyzers and H-S will contribute their data and expertise in high differential pressure electrolyzer systems. Based on the high pressure anode design concept developed in Phase I, GES will further develop the electrolyzer cell and stack design. In parallel, H-S will develop the key subsystem and control components for a brassboard balance of plant. The program will culminate in the fabrication, assembly, and demonstration of a brassboard high oxygen pressure generation system.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Giner, Inc.	Lead Organization	Industry	Newton, Massachusetts
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

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Primary U.S. Work Locations	
Alabama	Massachusetts

Project Transitions

June 2011: Project Start

July 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138796)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Giner, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

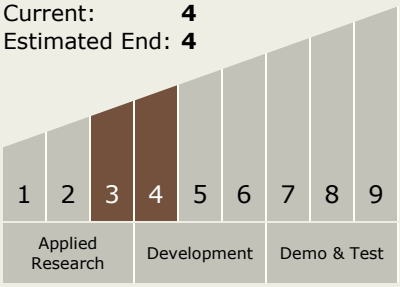
Carlos Torrez

Principal Investigator:

Timothy Norman

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - TX06.1.1 Atmosphere Revitalization

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System